

**Bonneville Power Administration  
Fish and Wildlife Program FY99 Proposal Form**

**Section 1. General administrative information**

**Plan, Site, Design & Construct NEOH Hatchery -  
Umatilla/Walla Walla Component**

**Bonneville project number, if an ongoing project** 8805302

**Business name of agency, institution or organization requesting funding**

Confederated Tribes of the Umatilla Indian Reservation

**Business acronym (if appropriate)** CTUIR

**Proposal contact person or principal investigator:**

Name	Gary James
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**Subcontractors.**

Organization	Mailing Address	City, ST Zip	Contact Name

**NPPC Program Measure Number(s) which this project addresses.**

7.4L.1

**NMFS Biological Opinion Number(s) which this project addresses.**

Operations Biological Opinion, or other Endangered Species Act requirements, enter the Action Number and Biological Opinion Title.

N/A

**Other planning document references.**

Wy Kan Ush Me Wa Kush Wit - Volume II. Subbasin Plans - Walla Walla River

## Umatilla Subbasin Plan - Section IV. Anadromous Fish Production Plans

### Umatilla Hatchery Master Plan - Production Profile

Draft Umatilla Hatchery Supplemental Master Plan - Sections I. Executive Summary - Introduction, Facilities Needed to Implement Plan; II. Recommendations; III. D. Introduction - NEOH Master Plan Background; V. Production Profile; and VI. Facilities Needed to Implement Plan

## Walla Walla River Subbasin Plan - Section IV. Anadromous Fish Production Plans

Draft Walla Walla Hatchery Master Plan - Sections I. Executive Summary - Introduction, Production Profile, Facilities Needed to Implement Program; II. Recommendations; IV. B. Fisheries Management Policies - Subbasin Goals and Policies; V. Production Profile - A. Introduction, B. Spring Chinook Hatchery Production, D. Summer Steelhead Hatchery Production; VI. Facilities Needed to Implement Program - B. Existing Facilities, C. New Facilities

Corps of Engineers Reconnaissance Report Walla Walla Basin - Section 4.01 (e)(9).  
Facilities for Reintroduction of Salmon

### **Subbasin.**

Walla Walla, Umatilla

### **Short description.**

Add incubation/juvenile rearing to the Walla Walla brood facility to rear summer steelhead and spring chinook salmon for acclimation/release in the Walla Walla and Umatilla Basins. Construct acclimation facilities to accomodate all juvenile salmon and steelhead released in the Walla Walla Basin.

## **Section 2. Key words**

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
X	Anadromous fish	X	Construction		Watershed
	Resident fish		O & M		Biodiversity/genetics
	Wildlife		Production		Population dynamics
	Oceans/estuaries		Research		Ecosystems
	Climate		Monitoring/eval.		Flow/survival
	Other		Resource mgmt		Fish disease
			Planning/admin.	X	Supplementation
			Enforcement		Wildlife habitat en-
			Acquisitions		hancement/restoration

### **Other keywords.**

hatchery, acclimation, incubation, rearing, design

### Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship
8343500	Umatilla Hatchery Satellite Facilities O & M	Project number 8343500 will provide for operation and maintenance of the facilities completed under this project.
8802200	Umatilla and Walla Walla Basins Trap and Haul Program	The trap and haul program will provide adult recovery information, broodstock for spawning, and they will trap and haul outmigrating hatchery produced juveniles during low water conditions.
9000500	Umatilla Hatchery M & E	The UHM&E project will provide biological information related to the operation of the facilities and will evaluate the success of the artificial production program.
8343600	Umatilla Passage Facilities O & M	The UPFO&M will assist in the maintenance of all facilities completed under this project.

### Section 4. Objectives, tasks and schedules

#### *Objectives and tasks*

Obj 1,2,3	Objective	Task a,b,c	Task
1	Finalize designs and construct NEOH hatchery on the Walla Walla River.	a.	Finalize plans and designs for summer steelhead and spring chinook hatchery on the Walla Walla River.
		b.	Construct summer steelhead and spring chinook hatchery on the Walla Walla River. Project number 8343500 will provide operation & maintenance upon completion.
2	Plan, site and design juvenile acclimation and release facilities for the Walla Walla Basin.	a.	Plan, site and design two or three juvenile acclimation and release facilities for construction in 2000 in the Walla Walla Basin. Project

			number 8343500 will provide operation & maintenance upon completion.

### ***Objective schedules and costs***

If you need more rows, press Alt-Insert.

<b>Objective #</b>	<b>Start Date mm/yyyy</b>	<b>End Date mm/yyyy</b>	<b>Cost %</b>
1	10/1998	9/1999	98%
2	10/1998	9/1999	2%

### **Schedule constraints.**

Finalization of Walla Walla Hatchery Master Plan and NEOH Umatilla Hatchery Supplemental Master Plan or availability of funding may delay the project.

### **Completion date.**

Construction costs will end in FY 2000. Operation and maintenance costs will be provided thereafter by project number 8343500.

## **Section 5. Budget**

### ***FY99 budget by line item***

<b>Item</b>	<b>Note</b>	<b>FY99</b>
Personnel		
Fringe benefits		
Supplies, materials, non-expendable property		
Operations & maintenance		
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	Walla Walla Hatchery construction	\$6,300,000
PIT tags	# of tags:	
Travel		
Indirect costs		
Subcontracts		
Other	Walla Walla Hatchery and acclimation facility siting, planning and design	\$100,000
<b>TOTAL</b>		<b>\$6,400,000</b>

**Outyear costs**

<b>Outyear costs</b>	<b>FY2000</b>	<b>FY01</b>	<b>FY02</b>	<b>FY03</b>
Total budget	\$2,000,000	0	0	0
O&M as % of total	0%			

**Section 6. Abstract**

CTUIR and ODFW have implemented a comprehensive plan to bring back extirpated spring chinook and depressed summer steelhead runs in the Umatilla and Walla Walla River Basins. A hatchery facility on the South Fork Walla Walla and two or three juvenile acclimation/release facilities in the Walla Walla Basin were identified as an integral part of this plan.

This project will provide for the design and construction of these facilities. The goals and objectives of the project are to finalize designs and construct a summer steelhead and spring chinook hatchery on the Walla Walla River and to design juvenile acclimation/release facilities in the Walla Walla Basin.

Upon completion, the facilities will be operated under project number 8343500. They will complete the components necessary to produce all summer steelhead and spring chinook juveniles necessary to achieve overall Umatilla and Walla Walla River adult return goals and they will allow all juvenile salmon and steelhead to be acclimated prior to release into the Umatilla and Walla Walla Basins. Increased juvenile production and reduced stress and increased imprintation from acclimation will increase returns and smolt to adult survival back to the Columbia, Umatilla and Walla Walla Rivers which specifically addresses the Columbia Basin Fish and Wildlife Program by contributing to increased adult returns to the Columbia Basin.

CTUIR, ODFW, BPA, NMFS, engineers, architects and other interested parties will participate in the planning, design and review process for the proposed facilities. CTUIR, BPA and others will follow up with the engineers, architects and contractor(s) during construction.

**Section 7. Project description****a. Technical and/or scientific background.**

Historically, summer steelhead and spring chinook salmon runs were once abundant in both the Walla Walla and Umatilla River Basins. Today, spring chinook salmon are extinct and summer steelhead runs are significantly reduced. Losses have generally been attributed to the development of hydroelectric dams and to forestry, agriculture and irrigation practices.

In the 1980's, CTUIR and ODFW began implementing comprehensive plans to supplement steelhead and re-establish salmon runs in the Walla Walla and Umatilla River

Basins to partially mitigate for these losses. CTUIR and ODFW recognized that artificial production facilities would be necessary to achieve adult return goals for the Walla Walla and Umatilla River Basins. The NPPC 1987 Columbia Fish & Wildlife Program, measure 703 (f) (5), authorized the planning, design, construction, operation, maintenance and evaluation of artificial production facilities to raise chinook salmon and summer steelhead for enhancement and restoration of fish runs in the Umatilla and Walla Walla River Basins and elsewhere. This measure is known as the Northeast Oregon Hatchery Project (NEOH).

Prior to the NEOH Project, a similar measure known as the Umatilla Hatchery Master Plan (UHMP) was completed. The UHMP identified the need for spring chinook production above that produced at Umatilla and other hatcheries. An additional 589,000 smolts are needed to achieve program goals for the Umatilla Basin. The CTUIR and ODFW recognized that this production should be included in the NEOH Project.

In the Walla Walla Basin, the Walla Walla Subbasin Plan identified the need for a production program of 600,000 spring chinook and 100,000 summer steelhead. The CTUIR and ODFW recognized that this production should also be included in the NEOH Project.

Facilities constructed under this project will specifically address juvenile acclimation/release and juvenile production needs which are essential to achieving the overall Walla Walla and Umatilla Basin natural and hatchery production goals. When completed, the facilities will allow fish managers to: 1) acclimate/imprint all smolts for increased survival and homing, 2) achieve the juvenile summer steelhead and spring chinook production goals necessary to meet adult spring chinook return goals for the Umatilla and Walla Walla River Basins, and 3) release juveniles in targeted areas for re-establishment of natural production and harvest.

The increased production and survival will address the NPPC's rebuilding goal by contributing to increased adult returns to the Columbia River.

The Council's System Policies of adaptive management, genetic risk assessment and escapement will be followed to guide achievement of Walla Walla and Umatilla Basin production goals.

A Umatilla Hatchery satellite facility for adult spring chinook holding/spawning already exists on the South Fork Walla Walla River. A "Phase II" at this site would add on the necessary incubation and rearing capabilities for the Walla Walla production program as well as the additional Umatilla production. The facility was designed and constructed so that these additions could be added.

Montgomery Watson Americas Inc., under contract with BPA, has produced two reports (Draft Siting Report and Draft Conceptual Design Report) pertaining to the NEOH Project. One report evaluates site locations and provides conceptual designs for NEOH fish facilities and the second report discusses production goals, bioengineering criteria,

reviews water quality and quantity data, discusses existing facilities and their potential for expansion, and documents the site/screening process used for NEOH facilities.

**b. Proposal objectives.**

Objective 1: Finalize designs and construct a summer steelhead and spring chinook hatchery on the South Fork Walla Walla River as a part of the NEOH Project. The facility would be capable of rearing 1.189 million spring chinook and 100,000 summer steelhead.

Objective 2: Plan, site and design two or three juvenile acclimation and release facilities for construction in FY 2000 in the Walla Walla Basin. A portion of the 600,000 spring chinook will be acclimated and released in the Touchet River. The remaining fish will be released at the South Fork Walla Walla Hatchery site. It is anticipated that some of the 100,000 steelhead will be acclimated and released in the North Fork Walla Walla River and/or Couse Creek and the remainder will be released at the hatchery site. Approximately 589,000 spring chinook will be acclimated and released at existing facilities on the Umatilla River.

Upon completion of the facilities, operation and maintenance will be provided by project number 8343500. Detailed O & M objectives will be similar to those listed in that projects last annual report (Rowan 1997).

**c. Rationale and significance to Regional Programs.**

NEOH facilities constructed under this project will be an essential part of comprehensive Walla Walla and Umatilla River fish restoration plans developed by CTUIR, ODFW and WDFW in cooperation with the Council, BPA, US Army COE, Bureau of Reclamation (BOR), NMFS, and various Irrigation Districts and private landowners. The project will increase smolt production and will help to increase smolt to adult survival and will directly increase returns and survival of salmon and steelhead to the upper Columbia River Basin which is consistent with the Council's Fish and Wildlife Program, U.S. vs. OR Columbia River Fish and Wildlife Plan and the Pacific Salmon Treaty.

CTUIR will operate the facilities in cooperation with ODFW as part of the Walla Walla and Umatilla artificial production programs. Other facility operations to complete the program include Umatilla Hatchery juvenile acclimation/release facilities on the Umatilla River. Numerous complimentary efforts funded by BOR, US Army COE and BPA (fish passage, habitat and flow enhancement, etc.) have been or are being addressed as part of the program. The Umatilla Passage Facilities O & M project will also assist in preventative and heavy maintenance at all facilities.

**d. Project history**

9101400 - Umatilla Hatchery Satellite Facilities - Planning, Siting, Design and Construction. The cost has averaged \$559,501 over the past four years, including an

estimated 1998 construction cost of \$2,200,000 for a final juvenile acclimation and release facility on the Umatilla River.

8805302 - NEOH - Grande Ronde Satellite Facilities O & M and NEOH Hatchery - Umatilla/Walla Walla Component - Planning, Siting, Design and Construction. These were formerly combined as one project. Umatilla/Walla Walla products to date include draft master plans and conceptual design reports.

The project cost has averaged \$131,600 over the past nine years.

**e. Methods.**

Objective 1: CTUIR, ODFW, BPA, NMFS, engineers, architects and other interested parties will meet as necessary to discuss final designs for a summer steelhead and spring chinook hatchery on the South Fork Walla Walla River. A spring chinook adult holding and spawning facility already exists at the site. While designing that facility, preliminary plans and designs for the hatchery were discussed and incorporated into the brood facility designs. Once final designs are complete, BPA will put the project out for bid and select a contractor(s). Construction is scheduled for completion in FY 1999. CTUIR, the operator of the facility, and the Umatilla Passage Facility O & M project, which assists in maintaining the facilities, will coordinate with the engineers and contractor(s) during construction to ensure various needs and details are met.

Objective 2: CTUIR, ODFW, BPA, engineers and architects will meet as necessary to discuss plans and designs for two or three juvenile acclimation and release facilities in the Walla Walla Basin. It is anticipated that designs will be similar to the Thornhollow facility on the Umatilla River. These facilities will be constructed in FY 2000.

**f. Facilities and equipment.**

Facilities proposed for construction under this project include incubation and rearing facilities for summer steelhead and spring chinook salmon. A "Phase I" Umatilla Hatchery satellite facility for adult spring chinook holding/spawning already exists on the South Fork Walla Walla River. A "Phase II" at this site would add on the necessary incubation and rearing capabilities for the Walla Walla production program as well as the additional spring chinook juvenile production needed to achieve Umatilla adult return goals.

This project will also provide for the planning and design of juvenile acclimation and release facilities in the Walla Walla Basin. One facility for spring chinook is anticipated to be constructed on the Touchet River. In addition, one or two facilities are needed for summer steelhead. Possible locations include the North Fork Walla Walla River and/or Couse Creek. These facilities will be constructed in FY 2000. The spring chinook acclimation facility will be similar to the Thornhollow facility constructed on the Umatilla River as part of the Umatilla River fish restoration program. This is one of the facilities which would be used to acclimate the Umatilla spring chinook component. The summer steelhead acclimation facilities may also be similar or they may be more



inexpensive above ground type tanks depending on results of planning and design discussions.

The Thornhollow facility includes a water intake structure with automatic screen cleaner, pump station, water headbox/distribution system, storage building, two concrete acclimation ponds (approximately 13,000 cubic feet each) and water outlet and fish release structure. Water is supplied by gravity flow to the pump station where it is pumped into the headbox. Water flow is approximately 1,600 gpm per pond. This facility has the capacity to acclimate approximately 26,000 lbs. of fish.

"Phase I" of the South Fork Walla Walla facility was constructed in 1997 to hold and spawn spring chinook salmon. While planning and designing the brood facility, preliminary plans and designs were discussed for the hatchery and they were incorporated into the designs for the brood facility. The brood facility was designed so that incubation and rearing capabilities could be added in the future. The pump house was constructed so that additional pumps could be easily added. Facility piping was laid out and sized to allow for additional flow requirements. The water treatment and generator systems were designed to allow for additional equipment, etc.

The existing facility includes a water intake system with automatic screen cleaning, pump station having a pumping capacity of 18,500 gpm, brood pond effluent water ozone treatment system, pollution abatement pond, five adult holding ponds (each 90 x 10 x 10 feet), mechanical fish crowder, standby generator, chemical storage and spawning buildings, two office spaces, and two homes for fisheries technicians. The spawning building includes a fish lift, electroshock anesthesia system, sorting and spawning facilities, wet and dry rooms, walk-in cooler/freezer, office space and restroom. In addition, there are two computers for monitoring the facility operations.

Other facilities needed include: 1) incubation/early rearing building which would house approximately 58 - eight tray vertical incubation units to accommodate approximately 1.94 million eggs and approximately 60 start troughs (60 cf each) for early juvenile rearing, 2) additional ozone generator to treat the influent water to the incubators and start troughs, 3) approximately 40 raceways (3,000 cf each) for final rearing, 4) additional pump(s) to increase water flows to approximately 25,200 gpm, 5) additional generator to accommodate more pumps, ozone generators, etc., 6) shop building, 7) freezer for feed storage, and 8) two additional houses for hatchery technicians.

A fish pump will need to be purchased or borrowed for loading fish transport units. Two or more GSA vehicles will be required for transportation. Other items needed include trash pumps, pressure washer, forklift, fish feeders, etc. Operation and maintenance of these facilities will be provided by project number 8343500 and some equipment presently being used under that project will be available for use at the hatchery and acclimation facilities. This includes a microscope, platform scales, weed eaters, sprayers, etc. Many items purchased under project 8343500, such as table saw, Hilti drill, etc. will be moved to the hatchery where it is anticipated the shop for both the Umatilla and Walla Walla programs would be located. The combined operation and maintenance for both

Umatilla and Walla Walla satellite facilities should provide for more simplified contractual arrangements and economy.

The Umatilla Passage Facilities O & M project, under contract with BPA, will assist in maintaining the facilities.

**g. References.**

Confederated Tribes of the Umatilla Indian Reservation, Oregon Department of Fish and Wildlife, Washington Department of Fisheries, and Washington Department of Wildlife. 1990. Walla Walla River Subbasin Salmon and Steelhead Production Plan. Prepared for the Northwest Power Planning Council. Portland, Oregon. 98 pp.

Confederated Tribes of the Umatilla Indian Reservation. 1993. Northeast Oregon Hatchery Project - Umatilla Hatchery Supplemental Master Plan. Prepared for Bonneville Power Administration, Portland, Oregon. 27 pp.

Confederated Tribes of the Umatilla Indian Reservation and the Oregon Department of Fish and Wildlife. 1990. Umatilla Hatchery Master Plan. Prepared for the Northwest Power Planning Council. Portland, Oregon. 118 pp.

Confederated Tribes of the Umatilla Indian Reservation and Oregon Department of Fish and Wildlife. 1990. Umatilla Subbasin Salmon and Steelhead Production Plan. Prepared for the Northwest Power Planning Council. Portland, Oregon.

Lofy, Peter T. and Gerald D. Rowan. 1990. Operation, Maintenance and Evaluation of the Bonifer and Minthorn Springs Juvenile Release and Adult Collection Facilities. Annual Report - 1989. Contract No. DE-B179-84BP17622. Prepared for Bonneville Power Administration, Portland, Oregon.

Northeast Oregon Hatchery Project: Draft Siting Report, February, 1992;

Northeast Oregon Hatchery Project: Draft Conceptual Design Report, Contract No. DE-AC79-91BP11466, October, 1992

Rowan, Gerald D. 1991. Operation, Maintenance and Evaluation of the Bonifer and Minthorn Springs Juvenile Release and Adult Collection Facilities. Annual Report - 1990. Contract No. DE-B179-84BP17622. Prepared for Bonneville Power Administration, Portland, Oregon.

Rowan, Gerald D. 1992. Operation, Maintenance and Evaluation of the Bonifer and Minthorn Springs Juvenile Release and Adult Collection Facilities. Annual Report - 1991. Contract No. DE-B179-84BP17622. Prepared for Bonneville Power Administration, Portland, Oregon.

Rowan, Gerald D. 1993. Minthorn Springs Creek Summer Juvenile Release and Adult Collection Facilities. Annual Report - 1992. Contract No. DE-B179-84BP17622. Prepared for Bonneville Power Administration, Portland, Oregon.

Rowan, Gerald D. 1994. Minthorn Springs Creek Summer Juvenile Release and Adult Collection Facilities. Annual Report - 1993. Contract No. DE-B179-84BP17622. Prepared for Bonneville Power Administration, Portland, Oregon.

Rowan, Gerald D. 1995. Minthorn Springs Creek Summer Juvenile Release and Adult Collection Facilities. Annual Report - 1994. Contract No. DE-B179-84BP17622. Prepared for Bonneville Power Administration, Portland, Oregon.

Rowan, Gerald D. 1996. Umatilla Hatchery Satellite Facilities Operation and Maintenance. Annual Report - 1995. Contract No. DE-B179-84BP17622. Prepared for Bonneville Power Administration, Portland, Oregon.

Rowan, Gerald D. 1997. Umatilla Hatchery Satellite Facilities Operation and Maintenance. Annual Report - 1996. Contract No. DE-B179-84BP17622. Prepared for Bonneville Power Administration, Portland, Oregon.

## **Section 8. Relationships to other projects**

This is not intended to duplicate the Relationships table in Section 3. Instead, it allows for more detailed descriptions of relationships, includes non-interdependent relationships, and includes those not limited to specific Bonneville projects.

Facilities constructed and designed under this project will be part of comprehensive Umatilla and Walla Walla Basin fish restoration plans developed by CTUIR, ODFW and WDFW in cooperation with the Council, BPA, NMFS, various Irrigation Districts and private landowners. The project will provide additional juvenile production and will help to increase smolt to adult survival which will directly increase returns of salmon and steelhead to the upper Columbia River Basin which is consistent with the Council's Fish and Wildlife

Program, U.S. vs. OR Columbia River Fisheries Management Plan and the Pacific Salmon Treaty.

The project, when complete, will require a great deal of cooperation and coordination among many diverse interest groups. CTUIR will operate the facilities in cooperation with ODFW as part of the Walla Walla and Umatilla Basins artificial production programs. Other projects to support the artificial production programs include fish passage and habitat and flow enhancement funded by the Bureau of Reclamation and BPA. The Umatilla Passage Facilities O & M project will also assist in providing preventative and heavy maintenance at all facilities.

Several projects will work closely together to monitor population status. In addition to hauling adults and juveniles during low water conditions and providing broodstock for spawning and coded-wire tag recovery information, the Walla Walla and Umatilla Basins Trap and Haul Program will provide a comprehensive monitoring opportunity for assessing adult returns to the Walla and Umatilla Rivers. The Walla Walla and Umatilla Basins Natural Production M & E Program will conduct extensive spawning ground and juvenile outmigration surveys to assess natural production.

The Umatilla Hatchery M & E project will provide biological information related to the Umatilla component of the production program and will help to evaluate the success of that program.

## **Section 9. Key personnel**

### Project Design and Construction (project 8805302)

Engineers, architects, contractors to be selected

### Project Operations and Maintenance (under project 8343500)

Name: Gerald D. Rowan

Education: Oregon State University, Corvallis, Oregon, 1972-1974. Graduate work in Department of Fisheries and Wildlife. Major field in fisheries science. Integrated minor in oceanography, statistics, and zoology. Thesis topic: Effects of Temperature and Ration Size on the Growth of Juvenile Chum Salmon (*Oncorhynchus keta*) in Salt Water.

Oregon State University, Corvallis, Oregon, 1967-1971.  
Undergraduate work in Department of Fisheries and Wildlife.  
Major field in fisheries science. Integrated minor.

Work Experience:

1990 to present Artificial Production Biologist, CTUIR, Pendleton, Oregon. Full-time (12 FTE'S). Responsible for all project activities including development of annual work statements and budgets, writing quarterly and annual reports, purchasing supplies and materials, data collection and summarization, work scheduling, coordination and operation of juvenile acclimation/release and adult holding/spawning facilities, etc. In addition, helped to plan and design new Umatilla Hatchery satellite facilities including juvenile acclimation and adult holding/spawning facilities.

- 1978-1989      Freshwater Facilities Manager, Anadromous Inc., St. Helens, Corvallis and Ft. Creek, Oregon. Responsible for all aspects of managing three freshwater hatcheries including feed and growth programming, vaccination, grading, egg and juvenile and adult transport operations, fish health monitoring and egg and fish treatments, tagging operations, ordering supplies and materials, hiring and firing, adult holding and spawning, incubation, water quality monitoring, etc. Worked with coho, fall and spring chinook salmon and atlantic salmon.
- 1976-1978      Oregon Aqua Foods, Newport, Toledo and Springfield, Oregon. Worked as general fish culturist at Newport and Springfield facilities and as fresh water hatchery manager at Toledo facility. Duties as fresh water manager included all aspects of managing a freshwater hatchery. Worked with rainbow trout, chum, pink, coho and chinook salmon.
- 1975      Aquaculturist, Sand Point Aquaculture Program, Sand Point, Alaska. Responsible for overall development of fish culture program at a small high school. Taught course in fish husbandry, built and operated a small demonstration hatchery and assisted in initial development of fish culture curriculum for state school system.
- Publications:      Have co-written one project annual report and have writtten seven annual reports

## **Section 10. Information/technology transfer**

BPA, CTUIR, ODFW, NMFS, engineers, architects and other interested parties will meet as necessary to discuss the final designs for a summer steelhead and spring chinook hatchery on the South Fork Walla Walla River as well as designs for two or three acclimation facilities. These discussions will result in numerous documents being produced including siting and design reports, engineering and architectural drawings/blueprints, contract agreements, construction specifications, operation and maintenance manuals, etc.